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ENTOMOLOGICAL NEWS

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Further Notes on the Taxonomy of the Centipede Scolopendra morsitans Linnaeus (Scolopendridae)

By B. S. JANGI, Department of Zoology, College of Science, Nagpur, India

In a discussion of the possible taxonomic status of the two variants 'A' and 'B' of the centipede, *Scolopendra morsitans* Linn. from Nagpur, I suggested that they might be two different species:[1] this suggestion was based on certain differences between them, seen to be invariably present, e.g., color-pattern, average body-size at maturity and a number of correlated morphological characters without any visible intergradation. Observations recorded by me subsequently on their breeding habits,[2] behavior,[3] and ecological requirements[4] do now seem to justify the splitting of this famous Linnaean species.

Linnaeus included *Scolopendra* under "Insecta Aptera" in the tenth edition of his monumental "Systema Naturae" published in 1758[5] and mentioned the following characters of *Scolopendra morsitans:*

> Pedibus utrinque XX. Oculi utrinque quaterni.
> Articuli corporis 22, antennarum 20.

It is impossible to identify the species on the basis of this meager description. Newport in his paper published in 1844[6] tells us that very few of the myriapods were known to Linnaeus and many of those few were confounded by him under a single name. This certainly would seem to be true at least in respect of his *Scolopendra morsitans* as substantiated by an extremely interesting remark of Newport who after examining the speci-

mens from the Linnaean cabinet wrote in 1845:[7] "I have not a doubt . . . that Linnaeus included several species of nearly the same size under the common name of *Scolopendra morsitans*. . . ."

Attems, in his revisional monograph on Scolopendromorpha published in 1930,[8] catalogued several species names as synonymous with *S. morsitans* Linn. A perusal of the literature referred to in Attems' catalogue shows that after the publication of the account of this species by Linnaeus, it has been repeatedly described under the same or different names by various authors on Chilopoda, on the basis of specimens collected from a number of localities in the tropical and sub-tropical parts of North America, South America, Africa, Asia and Australia. Obviously, there is a very wide range of variation in respect to several characters enumerated by Attems under the name *Scolopendra morsitans* Linn., and there can hardly be any doubt that in a revisional monograph such an account had naturally to be a composite one based on the descriptions—mostly poor—given by various authors who had dealt with specimens from distant localities all over the tropical and sub-tropical world.

Attems included many species in the synonymy of *S. morsitans* purely on speculation since it was impossible to refer them to the Linnaean *morsitans* on the basis of their original descriptions which were too poor to be of any taxonomic value. However, in some cases he was guided by the characters of anal legs, e.g., the secondary sexual character displayed by them and three rows of spines on the underside of their prefemora. Attems regarded the secondary sexual characters of the anal legs as the specific character of *Scolopendra morsitans* Linnaeus. These, in my opinion, are the characters of supraspecific level in the sense that they may be present in more than one species of the same genus. I have already pointed out that the presence or absence of the tarsal spur on the twentieth pair of walking legs is the most important character separating the two local variants in question[9] and as such should be regarded as the specific character but unfortunately a majority of the authors mentioned with reference to *S. morsitans* in the Attems' cata-

logue ignored this character and hence it is impossible to find out from their descriptions whether their material consisted of specimens with or without this tarsal spur. Consequently, one is placed at a great disadvantage in ascribing their descriptions to one or the other of the two variants. This character was referred for the first time by Haase in 1887 [10] but his account of *S. morsitans* was obviously based on a heterogeneous material and so was subsequently Kraepelin's published in 1903.[11] The latter author, however, again described *S. morsitans* in 1908 [12] and gave an account based on the collections from South-West Australia. His description apparently deals with a reasonably homogeneous material as would appear from his observation: "Der Tarsalsporn war am 20. Beinpaar bei allen westaustralischen Exemplaren wohlenwickelt; nur bei einem Exemplar fehlte er einerseits." Excepting this single aberrant specimen showing the tarsal spur on one side only, the material dealt with by Kraepelin appears fairly homogeneous in respect of the tarsal spur.

I think that Kraepelin's material from South-West Australia in no case represents more than one species. Whether or not it is *S. morsitans* of Linnaeus could only be decided if it is proved that Linnaeus had definitely designated a specimen as the type and above all, if the latter was still available and until these issues are finally settled, it seems to me that the best course would be to treat the variant 'B' as *Scolopendra morsitans* since under this name we come across, for the first time, an adequate description of what can be, with reasonable accuracy, called a species.[12] The species *Scolopendra morsitans* should, for the time being, be attributed to Linnaeus. Thus, the local variant 'A' which does not carry the tarsal spur on the twentieth pair of walking legs and which obviously represents a different species, must have a name. Attems recorded in 1930 [13] *S. morsitans* Linn. from Angola and treated the specimens as belonging to a new variety which he named *fasciata* and which undoubtedly agrees with the variant 'A.' Although Attems did not categorically state in his paper whether he regarded *fasciata* as a subspecies or an infra-subspecific variant it is

patently clear that he treated it as a form of the latter rank because in his monograph on Scolopendromorpha published during the same year just prior to the publication of his description of *fasciata,* he has distinctly treated the category "variety" belonging to a level lower than that of the subspecific realm. Since the form *fasciata* represents a new species, its variety name, i.e., *Scolopendra morsitans* var. *fasciata,* could now be elevated to the specific rank but it could rank in its new status *Scolopendra fasciata* only from the date on which it is so elevated.[14]

The subspecies, *Scolopendra morsitans amazonica,* described on the basis of specimens from Brazil by Bücherl in 1946[15] represents the same species as the variant 'A' and the form *fasciata*—all being without tarsal spur on the twentieth pair of walking legs. As such, *Scolopendra morsitans amazonica* Bücherl, 1946 when raised to a specific status *Scolopendra amazonica* Bucherl, 1946 will have priority over *Scolopendra fasciata,* the latter not having been elevated to the specific rank prior to 1946. Hence, *Scolopendra amazonica* Bücherl is, under the circumstances, the appropriate name for the variant 'A.'

The subspecific treatment of *Scolopendra morsitans* Linn. and *Scolopendra amazonica* Bücherl is proposed to be undertaken later.

I should like to place on record my sincere gratitude to Drs. Ralph E. Crabill, M. A. Moghe and S. M. H. Khatib for very kindly reading through the manuscript. My thanks are due to Drs. J. L. Cloudsley-Thompson and G. Owen Evans for making inquiries, on my behalf, in connection with the type of the Linnaean *S. morsitans.*

Addendum

Since this paper was submitted for publication, Mr. C. R. Puttanna, who has been working on the cytology of the two variants 'A' and 'B' of *Scolopendra morsitans* Linn. at the College of Science, Nagpur, and Central College, Bangalore, has been able to detect interesting cytological differences between them. The details are being worked out and will be published in due course.

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Two New Genera of Phytoseiid Mites with a Note on Proprioseius meridionalis Chant (Acarina: Phytoseiidae)

By DONALD DE LEON, Erwin, Tennesee

In general, phytoseiids are fast moving, wide ranging mites and are not found in colonies. The habits of the two species described below differ in these respects—they are rather sluggish and are gregarious. One species lives in close colonies within flowers, the other in loose colonies between flower heads. I have been unable to determine what the mites feed on, but believe *A. hebetis* may feed on pollen.

In the following descriptions all measurements are in microns.

ANTHOSEIUS, n. gen.

Phytoseiids with short, setiform, smooth setae, except last lateral which is expanded at tip; with five pairs of anterolateral setae; with dorsal shield postad rounding over sides and rear

of hysterosoma, and with the peritremata very coarse. Larva with a pair of short setae enlarged at tips on posterior dorsal shield and without a posterior pair of long whip-like setae; protonymph with an anterior and a posterior dorsal shield; legs of both proto- and deutonymph without macrosetae, and legs of all stages very short and stout.

Type of genus: *Anthoseius hebetis,* n. sp.

Anthoseius most closely resembles *Typhlodromus s. str.,* but differs from that genus chiefly in having peritremata very coarse, the last lateral seta expanded at tip, and the larva without a posterior pair of long whip-like setae.

Anthoseius hebetis, n. sp.

FEMALE: Dorsal shield convex (more strongly postad), 325–344 long, 180–201 wide (three specimens), widest at about L8, indistinctly imbricate, rather strongly sclerotized, light brown in color and with ten lateral (five anterolateral), two median, and six dorsal pairs of setae. L1–L10 11 to 19 long, L3 the shortest, L10 the longest; most of the setae about 15 long, all setae distinctly shorter than distance between their bases; L10 simple with tip enlarged; M1 11, M2 15 long (simple); D1–D5 11–14 long; S1 15, S2 13 long. Sternal shield with two pairs of setae; genital shield 78 wide near posterior margin; ventrianal shield with sides concave, 101 long, 69 wide near anterior margin and 77 wide at a level slightly anterior of anus, with three pairs of preanal setae and a pair of small pores all normally arranged (the shape of the ventrianal shield varies considerably, rarely approaching bilateral symmetry); two pairs of metapodal shields, the primary 34 long, about 5 wide, the accessory 16 long, about 2 wide; four pairs of interscutal setae including VL1 which is 18 long and six pairs of platelets bordering the ventrianal shield. Peritremata extending forward to about level of L1 and very coarse (about 7 wide), the shield extending back around coxa IV as a large blunt hook. Movable digit with a small subapical tooth, some specimens with a minute tooth proximal of subapical tooth; fixed digit with a

blunt subapical tooth and a smaller tooth between it and *pilus dentilis*. Legs heavy, short, and without macrosetae; tarsus IV, excluding pretarsus, 55 long.

MALE: Resembles female; dorsal shield 250 long, 135 wide (three specimens); ventrianal shield with three to five (usually five) pairs of preanal setae and three pairs of faint pores. Spermatophore bearer about 30 long, slightly curved, with a slight twist, and tapering gradually towards tip, tip slightly flared.

LARVA: Idiosoma 195 long. Anterior dorsal shield with nine pairs of setae (4 laterals, 1 median and 4 dorsals) normally arranged, the four laterals and D1 of about the same lengths (L2 10 long) and longer than the others (D2 5 long). Posterior dorsal shield with one pair of setae enlarged at tips and about 30 long. One pair of preanal setae and a pair of pores about 2½ times the length of the preanals anterolateral of them; no lateroventral or posteroventral setae; anal shield with a pair of minute pores anterolateral of paraanals. Movable digit without teeth; fixed digit with small knob near base of terminal hook. Legs without macrosetae.

PROTONYMPH: Idiosoma 226 long. Anterior dorsal shield with nine pairs of setae arranged as for larva and with a tenth pair of setae just off the shield at its posterolateral angles; S1 off shield between the third and fourth lateral setae. Two pairs of setae (apparently L7 and D5) on the interscutal membrane between the anterior and posterior dorsal shields, S2 slightly anterolateral of L7. Five pairs of setae on the posterior dorsal shield (L8, L9, L10, D6, and M2) M2 at side between L8 and L9; L8 and L10 with tips enlarged. Peritremata coarse, extending forward to a point about even with fourth lateral seta. Three pairs of intercoxal setae. Four pairs of setae and sometimes two pairs of shieldlets bordering anal shield. Anal shield with a pair of pores as for larva. Movable digit with a trace of a tooth, fixed digit with teeth as for adult but not as developed. Legs without macrosetae.

DEUTONYMPH: Dorsal shield 285 long with setae as for adult, L8 and L10 with tips enlarged; L10 about 21 long. Peritremata coarse, extending forward to a point about even with L2.

Five pairs of intercoxal setae. Seven pairs of setae and four pairs of shieldlets surrounding anal shield. Legs without macrosetae.

Holotype: Female, Key Largo, FLORIDA, December 6, 1958 (D. De Leon), from within the flower of *Heliotropium parviflorum*. *Paratypes:* Four males, four females, same data as for holotype.

This mite colonizes a single flower, all stages occurring within the throat. The throat of the flower is about a millimeter in diameter and two millimeters long. I have taken 35 mites from four flowers. When collected the mites were covered with pollen. This might be partly caused by disturbance when collecting them, but as the flowers appeared to be uninjured and no other arthropods were observed within or on the outside of the flowers, it seems quite possible that these mites were feeding on the pollen.

PHYLLODROMUS, n. gen.

Phytoseiids with dorsal shield smooth to faintly imbricate; with most of the lateral setae and M2 gradually enlarged towards the tips and with the tips abruptly constricted; with all setae simple, and with six pairs of dorsal setae. Peritremata very wide. Larva without a pair of long whip-like setae; protonymph with two dorsal shields, and legs of all stages without macrosetae.

Type of genus: *Phyllodromus leiodis,* n. sp.

Phyllodromus resembles *Asperoseius* Chant and *Proprioseius* Chant in having club-shaped lateral setae, but the club-shaped lateral setae of those two genera are strongly serrate, moreover they have five pairs of dorsal setae.

Phyllodromus leiodis, n. sp.

FEMALE: Dorsal shield smooth to faintly imbricate, 335–362 long, 162–193 wide (seven specimens), with nine lateral (four anterolateral), two median, and six dorsal pairs of setae; except for L5, those of the lateral series and D1, S1, and S2 slightly club-shaped and abruptly constricted at tips, L5 and the re-

maining setae of the dorsal shield slender and tapering from bases to tips; all setae smooth. The lengths of these setae follow: L1 29, L2 34, L3 29–36, L4 36–45, L5 18, L6 40, L7 26, L8 27, L9 52; D1 16, D2 16, D3 14, D4 18, D5 14, D6 8; M1 11, M2 46; S1 31, S2 29. L1–L3 about as long as distance to base of seta next behind. Peritremata coarse (about 7 wide), extending forward to about level of L1, the shield extending round behind coxa IV and forming a blunt hook. Sternal shield with three pairs of setae, the posteriormost pair set on small angular-shaped projections which in some specimens are cut off from the sternal shield, posterior margin of shield evenly, shallowly concave in middle two thirds and abruptly recessed at sides; genital shield 70 wide near base; ventrianal shield constricted behind posterior pair of preanals, 105–115 long, 65 wide near anterior margin and scarcely wider at level of anus, with two pairs of preanal setae and without pores; two pairs of metapodal shields, the primary 41 long, about 3.6 wide, the accessory 18 long, about 2 wide. A pair of setae between genital and ventrianal shields and four pairs of interscutal setae, including VL1 which is 29 long and shaped like L9, bordering ventrianal shield laterad. Fixed digit with *pilus dentilis* and four teeth (excluding terminal hook), the distal and proximal ones bidentate; movable digit with two minute teeth. Legs rather short but slender and without macrosetae; leg IV from base of coxa to end of claw 270 long; tarsus IV, excluding pretarsus, 72 long.

MALE: Dorsal shield 293–322 long (two specimens); resembles female in chaetotactic pattern, but D1, L7, L8, and VL1 tapering from bases to tips. Ventrianal shield with four to six (usually six) pairs of preanals and without pores. Spermatophoral process L-shaped with tip of foot bent away from body, shaft 19 long, foot 12 long. Primary and accessory metapodal shields coalesced.

LARVA: Idiosoma 181 long. Except for possibly L1, lateral setae and D4 of anterior dorsal shield with tips expanded; posterior dorsal shield with a single pair of setae, 56 long, rather coarse, and with tips expanded. Posteroventral setae 30 and 34 long and with tips expanded. Legs without macrosetae.

PROTONYMPH: Idiosoma 208 long, with an anterior and a posterior dorsal shield; anterior shield with four lateral, one median and four dorsal pairs of setae; posterior shield with three pairs of lateral setae and pairs M2 and D6, the posteriormost lateral seta 26 long; three pairs of setae in membrane between the two shields and three pairs of shieldlets, the anteriormost the largest; S1 and S2 present. Legs without macrosetae.

DEUTONYMPH: Idiosoma 302 long; resembles adult, with most of the lateral setae coarse, but tapering slightly from bases to tips. Seven pairs of setae, including VL1, surrounding anal shield, all but VL1 very short.

Holotype: Female, Miami, FLORIDA, September 20, 1958 (D. De Leon), from *Waltheria americana. Paratypes:* One male, four females, two nymphs, February 4, 1959, other data as for holotype. Specimens have also been taken from the same plant species in Everglades National Park and on Key Largo in March 1959. The mite occurs in numbers in among the flower heads which form dense clusters along the stem.

The holotypes of these two species are in the author's collection. Paratypes will be deposited in the University of Florida Collections, Gainesville.

Proprioseius meridionalis Chant 1957

P. meridionalis described from four adults collected from *Psychotria* at Homestead, Florida in 1949 is a common mite in Everglades National Park having been taken from *Guettarda scabra, Pluchea odorata,* and a malvaceous plant. It was also found in numbers on *Dryopteris* and on *Trema floridana* growing along the highway to the Keys about five miles south of Florida City. I have not collected it on the Keys, but to the north have taken it on *Callicarpa americana* at Coral Gables. The larva has a posterior pair of long whip-like setae, the protonymph an anterior and a posterior dorsal shield.

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Characters Separating Archips rileyanus and cerasivoranus as Two Species (Lepidoptera, Tortricidae)

By Nicholas S. Obraztsov [1]

The two North American tortricid species, *Archips rileyanus* (Grote) and *A. cerasivoranus* (Fitch), have a great external resemblance to each other, and rather similar bionomics. This circumstance gave Freeman (1958, pp. 21–22) the reason for treating them recently as two subspecies of one species which intergrade one with the other in intermediate zones of their range. The present author cannot approve this point of view since there are some important differences in morphology of the imaginal and larval stages of *rileyanus* and *cerasivoranus,* which it is quite difficult to explain by an intraspecific variation. The following lines show the most important characters distinguishing these two species. The figures of the genitalia are given in a generic revision of the Nearctic Tortricidae, prepared by the present author for publication. The data on the larvae were gathered from the paper of Peterson (1948, pp. 174–175). Their chaetotaxy has been described on the basis of Peterson's figures, under application of the terminology of Gerasimov (1952), used recently by Swatschek (1958) for the Tortricidae.

Archips rileyanus (Grote)

Cacoecia fervidana Walker, 1863, List of the specimens of lepidopterous insects, pt. 28, p. 313. Type locality: Georgia (lectotype, male without abdomen, and lectoallotype, female; British Museum). Subjective homonym of *Archips fervidanus* (Clemens, 1860).

Tortrix rileyana Grote, 1868, Trans. Amer. Ent. Soc., vol. 2, p. 121; Robinson, 1869, *ibid.*, vol. 2, p. 271, pl. 4, fig. 28; Riley, 1869, Rept. Insects Missouri, vol. 1, p. 153, pl. 2, figs. 3, 4. Type locality: America (the type specimen is probably lost).

Tortrix (*Loxotaenia*) *rileyana* Zeller, 1875, Verhandl. zool.-bot. Gesell. Wien, vol. 25, p. 221.

[1] Research fellow of the American Museum of Natural History. This work has been done under the auspices of the National Science Foundation.

Lozotaenia rileyana Walshingham, 1879, Illustrations of typical specimens of Lepidoptera Heterocera, vol. 4, p. 9.

Cacoecia rileyana Fernald, 1882, Trans. Amer. Ent. Soc., vol. 10, p. 11; Grote, 1882, New check list of North American moths, p. 57, no. 35.

Archips rileyana Fernald, 1903 (1902), Bull. U. S. Natl. Mus., vol. 52, p. 479, no. 5361; Forbes, 1924 (1923), Cornell Univ. Agr. Exp. Sta., Mem. 68, p. 496; Peterson, 1948, Larvae of insects, vol. 1, pp. 174–175, figs. L 32, H to J.

Homona rileyana Meyrick, 1912, *in* Wagner, Lepidopterorum catalogus, pt. 10, p. 14; 1913, *in* Wytsman, Genera insectorum, fasc. 149, p. 19.

Homona fervidana Barnes and McDunnough, 1917, Check list of the Lepidoptera of Boreal America, p. 175, no. 7283; McDunnough, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 55, no. 7310.

Archips carasivoranus [sic!] *rileyanus* Freeman, 1958, Canadian Ent., vol. 90, Suppl. 7, p. 22.

Archips cerasivoranus rileyanus Freeman, 1958, *ibid.*, vol. 90, Suppl. 7, p. 80, figs. 115, 116.

MOTH: Forewings with veins R_4 and R_5 connate or stalked; vein Cu_1 often from slightly before the lower angle of middle cell. Their ground-color ocherous-orange, sometimes slightly suffused with grayish brown to mallow-pink. Pattern of small, brown spots arranged in transverse rows arched outward. Basal row of three or four spots at the distal part of the first quarter of forewing. Middle row, shortly before the middle of forewing, of a larger costal spot and some further, smaller spots from the lower part of middle cell to dorsum. Submarginal row of a small costal spot and some further dots from the third quarter of costa to the upper part of tornus. Terminal row of small dots, parallel to the former, half-way between it and wing apex. Sometimes some more little dots along costa and at wing apex, forming no rows. None of the above spots overcrosses the veins, although some of the spots are slightly elongated longitudinally. Some of the spots often paler than the others, obliterate, or missing. Franges concolorous with wings. Length of the forewing 10 to 15 mm. Hind wings orange; franges concolorous.

MALE GENITALIA: Uncus somewhat dilated at base, then more or less narrowed and dilated again at tip. Middle process of gnathos broad in basal two-thirds and abruptly narrowed distad. Distal process of sacculus rather thin, forming with its base a triangle lying down.

FEMALE GENITALIA: Signum moderate, pointed.

LARVA: Full grown larva greenish yellow with a near black head, a deep brown to black cervical shield, deep brown to black anal plate, thoracic legs and prolegs, and conspicuous, brown to black pinacula about all setae. Microspines numerous, pigmented in folds of cuticle. Length of the body about 23 mm.

All teeth of the mandibles blunt; no additional tooth below the first lateral one. Metathorax with setae I and II almost on the same level; IIIa dorsocraniad from III; V ventrocraniad from IV. Fourth abdominal segment with two setae (III and IIIa) dorsad from stigma; seta IV ventrocraniad from V, both of them almost directly ventrad from stigma; seta VI dorsad from proleg.

RANGE: Pennsylvania, Ohio, Missouri, North Carolina, Georgia, Mississippi, Texas, Washington, California.

Archips cerasivoranus (Fitch)

Lozotaenia cerasivorana Fitch, 1856, Trans. New York State Agr. Soc., vol. 16, p. 382, pl. 2, fig. 3; 1859, Nox. Insects New York, p. 64, pl. 2, fig. 3; Riley, 1893, Insect life, vol. 5, p. 351. Type locality: State of New York (the type specimen is probably lost).

Tortrix cerasivorana Robinson, 1869, Trans. Amer. Ent. Soc., vol. 2, p. 275, pl. 6, fig. 47.

Tortrix (*Cacoecia*) *cerasivorana* Zeller, 1875, Verhandl. zool.-bot. Gesell. Wien, vol. 25, p. 217.

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MOTH: Forewings with veins R_4 and R_5 separate; vein Cu_1 from the lower angle of middle cell. Their ground-color ocherous-orange suffused with brown, crossed by pinkish transverse lines or irregular areas with a silky gloss. Basal quarter of forewing either completely dark brown or outlined by a dark brown line divided sometimes in spots, or not indicated by any sign. Costa before the middle and between this latter and wing apex with two large, more or less dark, brown spots. Sometimes small, dark, broad costal dots or short lines in the interspaces of the above large spots and between the outer of them and wing apex. A large, subquadrate, dark brown spot below the distal part of middle cell, and a vertical, linear spot above dorsum at tornus. A rather narrow, pale brown line from the outer, larger, costal spot to the upper part of tornus. Occasionally, some brownish spots or dots in other wing areas, or, some or all of the spots are lacking. Franges orange, paler than the ground of forewings. Length of the forewing 8 to 13 mm. Hindwings orange, usually suffused by brown, especially dorsad from middle cell; franges paler than the wing ground.

MALE GENITALIA: Uncus almost equally broad from base to tip. Middle process of gnathos narrowed gradually from base to tip. Distal process of sacculus rather thick, forming together with its base an erect triangle.

FEMALE GENITALIA: Signum large, blunt.

LARVA: Full grown larva yellowish with a black head and near black or dark brown cervical shield, anal plate, lateral areas

on anal prolegs, and two pinacula on prothorax. No distinct pinacula on remaining segments. Microspines on cuticle inconspicuous, light colored. Length of the body about 15 mm.

Mandibles with all lateral teeth more or less distinctly pointed, and with a small, additional tooth on oral surface immediately below the first lateral tooth. Metathorax with seta II distinctly ventrocraniad from I; IIIa dorsocaudad from III; V directly ventrad from IV. Fourth abdominal segment with only one seta (III) dorsad from stigma; seta IV distinctly ventrocraniad from V, both of them ventrocraniad from stigma; seta VI dorsocaudad from proleg.

RANGE: Quebec, Ontario, New Brunswick, Nova Scotia, Manitoba, Alberta, Saskatschewan, British Columbia; Maine, New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Ohio, Illinois, Michigan, Minnesota, Missouri, District of Columbia, Mississippi, Montana, Idaho, Wyoming, Colorado, Utah, Nevada, Washington, Oregon, California.

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EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Tenebrionidae of the World wanted, in exchange for insects of Argentina and neighboring countries. Horacio J. Molinari, Av. Lib. Gral. San Martin 55, Acassuso (Buenos Aires), Rep. Argentina.

Butterflies. Wish to exchange specimens for Japanese species. Please write to Ichiro Nakamura (Boy, age 16), 26 Aza-Nichiyama Obayashi Takarazuka-shi, Hyogo-Ken, Japan.

Phasmidae of nearctic area desired alive. Purchase or trade, drawing on large stock of major orders, worldwide. Domminck J. Pirone, Dept. Entomology, Cornell University, Ithaca, N. Y.

Nitidulidae and Rhizophagidae wanted in exchange for European beetles of all families. O. Marek, Zămberk 797, Czechoslovakia.

Wanted and Needed. We are compiling a history of entomology, and particularly, at present, of the amateur insect clubs that flourished 50 to 75 years ago. Will you who have knowledge of such early clubs or societies advise me, giving facts on the time of existence, members, etc., which you may have. J. J. Davis, Dept. of Entomology, Purdue University, Lafayette, Indiana.

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